REMARKS

The claims are amended in an endeavor to avoid the formal objections.

The amount of each component as defined in original claim 13 and the specification at page 9, is introduced into claim 1. Claim 13 is amended to a more preferred range (see page 9).

The clerical errors are corrected in claim 3 (e.g. see disclosure at end of page 3 of the specification).

The amendments restrict the composition claims to novel combinations of THP and biopenetrant and the method claims to the use of combinations not previously described for use in water treatment.

To reduce formal objection issues concerning selection of suitable biopenetrants, claim 1 is restricted to biopenetrants defined in original claims 9 and 12. Also, the amounts are restricted to ranges originally specified in claim 13. Claim 13 was amended as discussed above. Claims 3 and 4 further define the type of biopenetrant. It is submitted that the scope of these claims is now fully enabled.

The claimed combination is a unique combination of agents, as is discussed below. The Examiner questions "synergistic" mixtures and how to select one. However, the term "synergy" as used here is synergy between the functions of the components.

The claims relate to the synergy which arises when THP and certain non-surfactant biopenetrants are used in combination for

killing microorganisms protected by a hydrophobic outer layer. Previously surfactants were the only compounds known to promote the penetration of hydrophobic layers by THP. However, surfactants are generally of limited effectiveness unless sufficient quantities are used to cause unacceptable foaming problems in water treatment. The invention provides novel synergistic compositions which act as biopenetrants without causing foam problems, so permitting the amount of surfactant to be reduced or eliminated. Synergism is evidenced by the specification Example 1 and its associated Table (THPS/WSCP compared with prior-known formulations).

The anticipation rejection of claims 1, 2 and 16-17 over Davis et al. (GB 2 145 708) is avoided by combining claims 9 and 12 into claim 1.

The obviousness rejection is based on a combination of Davis et al. and a number of secondary references for their teaching of specific compounds.

Concerning the secondary references, although they teach the use of various compounds, none of the secondary references (LEGROS, GERHOLD, BARDOLIWALLA or WEST) relate to the use of a THP salt or THP condensate, alone or in a combination, for the disinfection of water.

Davis (EP 0 491 391) the primary reference, relates to a method of making phosphono-carboxylic acids and to their use in water disinfection. It does not relate to THP salts or THP condensates.

The rejection states that Davis et al. teaches antimicrobial composition comprising THP and a biopenetrant such as dispersants.

However, Davis et al. refers to a synergy between two known biocides, THP and the thiocyanate biocides, such as TCMTB. This is not a teaching of a combination of THP and a biopenetrant. TCMTB is not a biopenetrant. As can be seen from the enclosed extract from "Microbiosides for the Protection of Materials" by Wilfried Paulus published in 1993 by Chapman and Hall, TCMTB is substantially water insoluble (0.033 grams per liter) but dissolves in organic solvents such as glycol ethers and is consequently normally supplied as a solution in such solvents. Thus, diethylene glycol monoethyl ether was present adventitiously in the examples of reference 1. The reference thus teaches only the synergy between two non-penetrant biocides, THP and TCMTB. It does not teach the skilled reader that the glycol ether would itself have acted synergistically with THP. Since THP is highly soluble in water (ca 80% by weight) organic solvents would not normally be used in conjunction with THP. Davis et al. therefore provides no general teaching regarding use of non-surfactant biopenetrants with THP.

In view of the above, there is no teaching of the use of THP and a "biopenetrant" in Davis et al. Thus, it is not obvious to substitute compounds of the secondary references for compounds in Davis et al. The present invention is, therefore, not obvious.

Withdrawal of the rejections and allowance of the application are therefore respectfully requested.

Respectfully submitted,

Frishauf, Holtz, Goodman,
Langer & Chick, P.C.
767 Third Ave., 25th Floor
New York, NY 10017-2023
Tel. No. (212) 319-4900
Fax No.: (212) 319-5101
MJC/ld

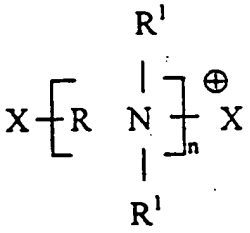
MARSHALL J. CHICK
Reg. No. 26,853

Enc. Substitute Specification for SN 09/582,152
MARKED-UP VERSION OF AMENDED CLAIMS

MARKED UP VERSION OF AMENDED CLAIMS SN 09/582,152

1. (Amended) A biocidally synergistic mixture comprising THP, at least one THP-compatible non-surfactant biopenetrant and, optionally, a surfactant, wherein said biopenetrant is a polymer or copolymer, having a plurality of quaternary ammonium groups, an alkyl benzene or alkyl naphthalene sulphonate having less than 5 aliphatic carbon atoms, and/or a phosphono polycarboxylic acid and the concentration of THP is from 10 to 75% by weight and the concentration of biopenetrant is from 0.1 to 10% by weight.

3. (Amended) A composition according to claim 1 [2] comprising as biopenetrant a compound having a polymeric cation with a formula



wherein each R is a divalent organic group constituting, with the ammonium group, a monomeric residue, or is separately selected from two or more comonomeric residues and each [R] R^1 is an alkyl or hydroxyalkyl group, X is hydrogen or a monovalent inorganic or organic end capping unit and n is from [3] 2 to 3000.

4. (Amended) A composition according to claim 1 [3] wherein the non-surfactant biopenetrant is a methylated polyethylene polyamine comprising a polymeric cation of the formula:

$$CH_3[N^{\oplus}(CH_3)_2CH_2CH_2]_nN^{\oplus}(CH_3)_3$$

where n is from 2 to 10.

13. (Amended) A composition according to claim 1 consisting of an aqueous solution wherein the concentration of THP is from [10 to 75%] 30 to 50 % by weight of the solution and the concentration of non-surfactant biopenetrant synergist is from [0.1 to 10%] 0.5 to 2% by weight of the solution.